

Amendment and Response Under 37 C.F.R. 1.116

Applicant: Michael Bauer et al.

Serial No.: 10/565,259

Filed: January 19, 2006

Docket No.: I431.145.101/FIN606PCT/US

Title: SUPPORT WITH SOLDER BALL ELEMENTS AND A METHOD FOR POPULATING SUBSTRATES WITH SOLDER BALLS

REMARKS

The following remarks are made in response to the Final Office Action mailed May 21, 2010. Claims 26, 29 and 34 have been previously withdrawn from consideration. Claims 1-24 and 37 have been previously cancelled. Claims 25, 27, 28, 30-33, 35 and 36 were rejected. With this Response, claim 31 has been amended and claims 25-30 have been canceled. Claims 31-33, 35 and 36 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 102

Claims 25, 31, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Hotchkiss (US 6,239,013). Claim 25 has been canceled. Applicants respectfully traverse the remaining rejections.

It is well accepted that, to anticipate a claim, the cited reference must disclose each claim element, and the elements must be arranged as required in the claim. MPEP 2131 (citing *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)).

Claim 31 as amended includes,

attaching solder ball elements to the support material by arranging the solder ball elements in rows and columns on the layer of adhesive in a prescribed minimally permissible pitch for a semiconductor chip or for a semiconductor component;

loosening solder ball elements at prescribed first positions by selectively irradiating the support such that the prescribed first positions receive radiation and second positions do not receive radiation to reduce the adhesion of the layer of adhesive at only the prescribed first locations;

Hotchkiss fails to disclose a system in which the irradiating device selectively irradiates the support to reduce the adhesion of the layer of adhesive for loosening solder ball elements at only *prescribed* positions. In the claimed method, only some of the solder ball elements that are attached to the layer of adhesive on the support are loosened by selectively irradiating the adhesive layer in the vicinity of the solder ball elements to be removed. Other areas do not receive radiation. The loosened solder balls are then removed.

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In contrast, Hotchkiss teaches irradiating the *entire* support in column 5, lines 29 to 37 so that the adhesive sheet is removed from all of the solder particles. This disclosure in Hotchkiss actually teaches away from the claimed method, which recites selectively irradiating the support such that the prescribed first positions receive radiation and second positions do not receive radiation to reduce the adhesion of the layer of adhesive at only the prescribed first locations. The Office Action fails to identify a disclosure in Hotchkiss of selectively irradiating the support so that only certain solder balls are loosened.

Hotchkiss further fails to disclose a removal device or removing the solder balls selectively loosened by irradiation. The Office Action identifies column 4, lines 60-67 of Hotchkiss as disclosing this element. The cited portion of Hotchkiss teaches using a gas stream or mechanical device to remove excess solder particles. There is no mention of the gas stream or other mechanical device removing solder particles loosened by selective irradiation. In fact, Hotchkiss discloses using removing excess solder particles before it teaches the use of radiation for removal of the adhesive sheet.

Since Hotchkiss fails to disclose each element of claim 31, it cannot anticipate this claim, or claim 36 dependent thereon.

Claims 25, 31, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Wachtler (US 6,071,801). Claim 25 and has been canceled. Applicants respectfully traverse the remaining rejections.

Claim 31 includes

loosening solder ball elements at prescribed first positions by selectively irradiating the support such that the prescribed first positions receive radiation and second positions do not receive radiation to reduce the adhesion of the layer of adhesive at only the prescribed first locations;

Regarding this claim element, the Office Action cites column 5, lines 29-36 of Wachtler.

However, the cited portion teaches irradiating adhesive areas prior to attaching solder particles to

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the adhesive. Thus, solder ball elements are not loosened by selective irradiation in the cited portion of Wachtler.

Since Wachtler fails to disclose each element of claim 31, it cannot anticipate this claim or claim 35 dependent thereon.

Claim Rejections under 35 U.S.C. § 103

Claims 27, 28, 30, 32 and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hotchkiss and/or Wachtler in view of additional references. Claims 27, 28 and 30 have been canceled. Claims 32 and 33 depend on claim 31 and are therefore allowable for at least the same reasons.

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CONCLUSION

In view of the above, Applicant respectfully submits that all of the pending claims are in form for allowance. Therefore, reconsideration and withdrawal of the rejections and allowance of the claims are respectfully requested.

No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

Please consider this a Petition for Extension of Time for a sufficient number of months to enter these papers, if appropriate. At any time during the pendency of this application, please charge any additional fees or credit overpayment to Deposit Account No. 500471.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to Mark L. Gleason at Telephone No. (612) 767-2503, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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